

Hydrocodone Prescriptions in 2020 in the Medicare Part D Population

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Abstract

Hydrocodone is an opioid commonly prescribed to Medicare patients for pain management. In the past decade, opioid use has increased for pain management and recreational purposes, contributing to a nationwide misuse issue. Given the current opioid epidemic, an evaluation of the Medicare Part D data from the Centers of Medicare and Medicaid was conducted to determine what provider specialty was responsible for the highest percentage of hydrocodone prescriptions in 2020. The data was filtered to include all hydrocodone prescriptions, consisting of just hydrocodone and combination products. Family medicine was the highest prescriber of hydrocodone (24.85%) and total opioids (22.42%). The second highest was internal medicine, with (17.05%) of hydrocodone prescriptions and (17.47%) of total opioid prescriptions. In conclusion, protocols for opioid stewardship can be implemented to the top prescribing specialties with the intention of decreasing hydrocodone and overall opioid prescriptions.

Introduction

Medicare is a government-associated health insurance program (1). The populations that are eligible to apply for Medicare include people 65 years of age or older and those with a disability, end stage renal disease, or Lou Gehrig's disease (1, 2). There are four different parts of Medicare: Part A, B, C, and D (2). Medicare Part D involves prescription drug coverage and has been suggested to be responsible for the increase in overall prescriptions utilized by the geriatric population by lowering their personal costs (3).

Opioids are used as analgesics, antitussives, antidiarrheals, and pain management medications (4, 5). In recent years, opioids have emerged as a popular drug for recreational use due to their sedative effects that make people feel relaxed and "high" (6). Between 2012 and 2018, opioid misuse has increased from 10 to 24 per 1,000 individuals within the Medicare population. The continuation of prescriptions that fall under part D has raised some concern, specifically the increase in reports of chronic pain along with increasing suicide rates among the older adult population is suspected to be correlated to the misuse of prescription opioids (7, 8).

Hydrocodone is a semi-synthetic opioid that is prescribed for pain management. The drug is a mu-receptor agonist. Upon saturation of mu-opioid receptors, hydrocodone can also activate delta and kappa opioid receptors (9). By attaching to these receptors, opioids block normal pain signals sent throughout the body and release large amounts of dopamine (4). This dopamine release activates the reward pathway in the nucleus accumbens may accelerate user misuse of the drug.

Habitual misuse of hydrocodone can result in slowed breathing, which can then cause hypoxia when too little oxygen reaches the brain (4). Hypoxia can lead to detrimental effects including permanent brain damage, coma, or death (4). The U.S. Drug Enforcement Administration reclassified hydrocodone from Schedule III to Schedule II under the Controlled Substances Act in 2014. This change called for stricter policies on prescribing hydrocodone products due to their high potential for misuse (10).

Given the concern for opioid prevalence in the Medicare Part D population, previous studies focused on analyzing the top specialties who prescribed these Schedule II drugs as well as the general pattern of opioid distribution. Between 2007 and 2011, opioid distribution increased in volume leading to prolonged usage among the Medicare population (11). In 2013, family medicine, internal medicine, nurse practitioners and physician assistants were found to dominate overall opioid prescriptions (12). In 2015, a cross-sectional analysis showed that nurse practitioners and physician assistants were still prescribing a high volume of opioids (13). The trends in these investigations show little progress in reducing opioid prescriptions between the years of 2007 and 2015. Little research exists that evaluates more recent hydrocodone prescription patterns. The purpose of this investigation was to compare various specialties for their hydrocodone and opioid claims in 2020.

Methods

Data was examined from the Centers for Medicare and Medicaid Services (14) database, specifically the Medicare Part D Prescribers 2020 data set and the Medicare Part D Prescribers by Provider and Drug 2020 data (14). The Medicare Part D Prescribers by Provider and Drug 2020 was filtered through USAN Generic Names to only include data regarding hydrocodone prescriptions. In order to obtain data regarding all prescriptions containing hydrocodone, combination products were included in the data. This was done by setting the filter to act on the generic name of the drugs and include all drugs that contained hydrocodone. The top combination products included mixtures of hydrocodone with acetaminophen and ibuprofen. The prescribers included in this data set each had a valid National Prescriber Identifier (NPI) and had been included within Medicare Part D Prescription Drug Events (PDE) which were reported via Part D plan sponsors during the 2020 calendar year. The data extracted from each set included the prescriber type (physicians (MD/DO), dentists (DMD/DDS), nurse practitioners (NP), and physician assistants (PA)), prescriber NPI, prescriber state, and total claims number. No data was excluded. Procedures were exempt by the Geisinger IRB.

The data was used to calculate the provider types that prescribed the highest percentage of opioids of all 2020 Medicare Part D prescribers, 2020 opioid prescriptions, and provider type percentages of hydrocodone prescriptions. Some of the drugs in the overall opioid data included fentanyl citrate, acetaminophen with codeine, codeine, morphine sulfate, buprenorphine, and tapentadol HCL (15). These drugs were chosen using the complete Medicare enrollment database, CMS Chronic Condition Data Warehouse (CCW). The following calculations were performed for each provider type to find: the percentage of hydrocodone claims (sum of hydrocodone claims per provider type/total sum of hydrocodone claims), percentage of total opioid prescriptions under Medicare Part D (sum of opioid prescriptions per provider type/sum of total opioid prescriptions by all providers), hydrocodone percentage of opioid claims (sum of hydrocodone claims per provider type/sum of opioid claims per provider type), and hydrocodone percentage of total opioid claims (hydrocodone claims by provider type/total opioid claims under Medicare part D). These calculations were repeated to determine the provider type that prescribed the highest percentage of hydrocodone.

Results

There were 51,918,067 total opioid claims in 2020 where 20,760,192 of the claims were for hydrocodone. Hydrocodone accounted for 39.99% of all opioid claims. This data were then used to explore which provider type was responsible for the highest percentage of hydrocodone prescriptions and how that compared to their opioid prescription percentages. Family medicine providers were the top prescribers of both hydrocodone and opioids. Table 1 shows that family medicine providers reported 5,159,671 hydrocodone claims which accounted for 24.85% of all hydrocodone claims, and 11,641,178 opioid claims which were responsible for 22.42% of all opioid claims. Of their 11,641,178 opioid claims, 44.32% were for hydrocodone. One-tenth (9.94%) of all opioid claims reported in 2020 were for hydrocodone by family medicine providers.

Along with family medicine, the other leaders in hydrocodone and opioid Medicare Part D prescriptions in 2020 included internal medicine, nurse practitioners, physician assistants, pain management, anesthesiology, physical medicine and rehabilitation (PM&R), orthopaedic surgery, emergency medicine, and dentists. The corresponding calculations for total hydrocodone and opioid claims and percentages for each provider type can be found in Table 1. Figure 1 provides a visual representation of the total opioid and hydrocodone claims made by the top ten providers. Figure 2 showcases the percentages of hydrocodone and opioid claims made by each of the top ten providers.

Provider Type	H Claims	O Claims	H/O Claims % by Provider	H/Total O Claims %
Family Medicine	5,159,671	11,641,178	44.32%	9.94%
Internal medicine	3,539,109	9,070,564	39.02%	6.82%
Nurse Practitioner	2,790,107	7,766,750	35.92%	5.37%
Physician Assistant	1,581,841	4,599,925	34.39%	3.05%
Pain Management	972,181	2,229,842	43.60%	1.87%
Anesthesiology	895,702	2,237,927	40.02%	1.73%
PM&R	861,365	2,316,015	37.19%	1.66%
Orthopedic Surgery	772,603	1,841,025	41.97%	1.49%
Emergency Medicine	454,678	896,243	50.73%	0.88%
Dentist	397,062	655,434	60.58%	0.76%
Total Claims	20,760,192	51,918,067		39.99%

Table 1. Hydrocodone (H) claims and total opioid (O) claims by provider type, along with percentages of H/O claims by provider type, and H/Total O claims in Medicare Part D in 2020. (PM&R: Physical Medicine & Rehabilitation)

Discussion

The report found that family medicine prescribed the highest percentage of both opioids and hydrocodone to the Medicare Part D population compared to any other specialty. Among the Medicare Part D population, opioid medication usage poses a risk for falls, unexpected drug interactions, or accidental overdose (16). Short-term effects of opioid use include pain relief and euphoria dissociation. However, short-term usage among any population may turn into long-term usage. The latter has the potential to cause drowsiness, confusion, nausea, and constipation. These concerns and potential adverse effects introduce the importance for looking into why family medicine has the highest prescription rates for hydrocodone and opioids in general. One plausible reason family medicine prescribers make up most of the opioid/hydrocodone claims could be that individuals seek out their primary care/family medicine physician more than any other specialty (16). Pain, the common cold, and acute bronchitis were the main complaints made by patients who were prescribed hydrocodone by their family medicine physician (17–19). In 2016, there were roughly 50 million individuals in the US experiencing chronic pain (20). Opioids have had popular use for chronic pain management. However, not all common cold cases require hydrocodone. The CDC reports that individuals tend to have 2–3 colds per year, and that this number is even higher in children (19). That poses the question of why are providers exposing their patients to a drug with such high abuse potential to treat a condition as mild as a common cold, potentially 2–3 times per year? Ultimately, it was concluded family medicine may appear as the top prescriber due to the frequency and popularity of visits to this provider.

Furthermore, internal medicine contributed a large portion of hydrocodone and opioid claims. On a broader scale, internal medicine treats a wide variety of cases similarly to primary care physicians. However, they see mainly adults (21). This narrowing of the population in which internists treat may account for the difference in total claims from family medicine.

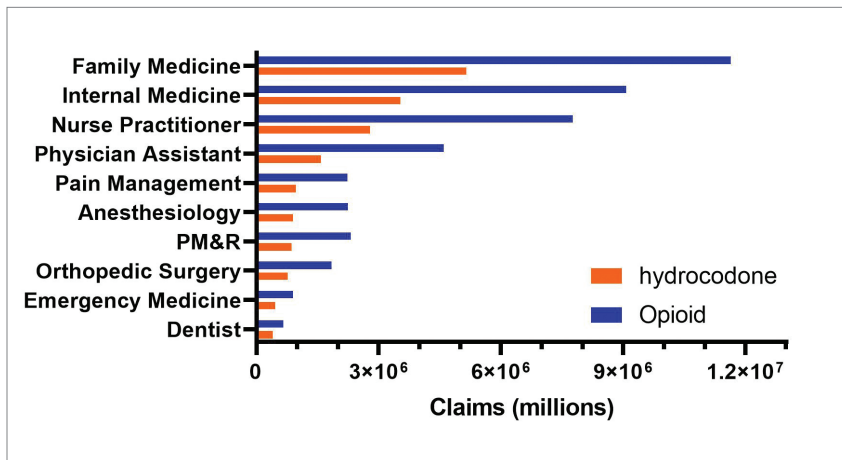


Figure 1. 2020 Top 10 Prescriber Specialties of Hydrocodone Compared to Total Opioid Prescriptions by Medicare Part D Claims. This figure gives a visual comparison of the total hydrocodone claims made by each provider type compared to their total number of opioid claims in 2020. (PM&R: Physical Medicine & Rehabilitation)

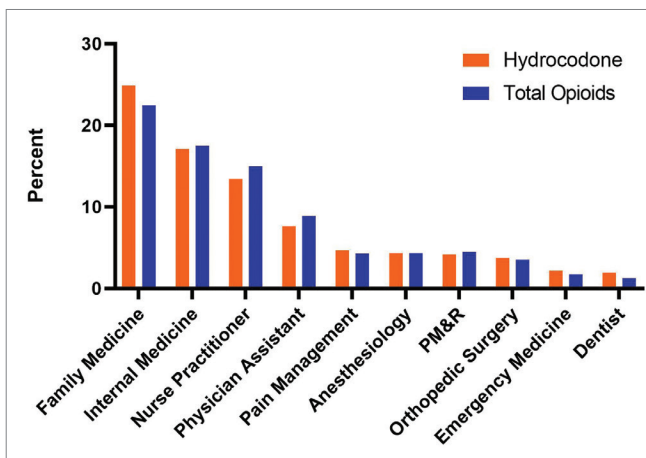


Figure 2. 2020 Prescriber Percentages by Provider Type: Hydrocodone vs Total Opioid Claims in Medicare Part D. (PM&R: Physical Medicine & Rehabilitation)

Other providers worth mentioning include nurse practitioners (NPs) and physician assistants (PAs). Both are licensed to prescribe, administer, and distribute Schedule II drugs in most states. The volume of this profession is continuing to grow and slowly alleviating the physician shortage (22). Both NPs and PAs have been found to prescribe at rates similar to licensed physicians, however they have been shown to provide a greater number of outliers who prescribed higher frequencies and dosages of opioids (13).

The findings of this analysis are similar to and extend upon the previous reports using the 2013 and 2015 data (12, 13). The similarity in patterns should raise concern since the same specialties are still dominating opioid prescriptions. Drawing awareness and implementing regulatory measures to these specialties could result in a downward trend of all opioid and hydrocodone prescriptions.

The vulnerability of the Medicare population creates a concern for misuse. Reports of increasing chronic pain in the aging

population as well as the increased suicide rates have potential to cause higher rates of misuse (8). Considering this information, evaluating the prescription rate of hydrocodone is important to identify who is prescribing these drugs with a high abuse potential.

Telemedicine is another component to consider in regard to its contributions to the opioid epidemic. Following the COVID-19 pandemic, the rates of virtual provider visits have increased. The DEA implemented a policy granting the ability to prescribe Schedule II drugs without evaluating the individual in person (23). The already vulnerable population is now enabled to obtain a script for hydrocodone without ever leaving their home. The current study used data from 2020, therefore we may see an inflated dataset compared to years preceding the COVID-19 pandemic.

Future studies may focus on comparing these data between multiple years, both before and after the pandemic. Future studies should note a limitation that may exist with the current Medicare Part D Population due to their lack of utilization of technology, but as years progress, the next generation of older adults may be more accustomed to technology and may utilize telemedicine to acquire drugs.

Another potential contributor to the opioid epidemic in the United States is opioid specific direct to physician promotional payments. A study was conducted to evaluate the association between opioid promotion to physicians and their opioid prescribing rates under Medicare Part D between 2014 and 2016. It was found that physicians who received promotional payment prescribed significantly more doses of opioids (24). They also evaluated the payment patterns of specific opioids and found that physicians who received hydrocodone related payments prescribed about 5161 additional daily doses of hydrocodone (24). Hydrocodone and oxycodone displayed the largest association of increased prescribing rates by physicians who received promotional payment from the drug manufacturers (24). Given this study found significant increases in the rates of opioid prescriptions due to promotional payments, the structure and ethicalness of these promotional programs should be reevaluated at an institutional level. By ceasing these promotional/payment programs, physicians will be less encouraged to prescribe these drugs due to the lack of financial compensation that currently accompanies them.

Awareness of the patterns of prescribing among all, including doctors and other provider types, is crucial, especially in the Medicare Part D population as it may ignite the process of lowering and refining these numbers. A few policy implementations have begun with the intent to regulate and lower these rates. The Department of Health in Rhode Island implemented the screening brief intervention and referral treatment (SBIRT) using the opioid risk scale to compile an assessment of an individual's potential for misuse. Additionally, they advise making a treatment plan that is specific to each individual patient by taking into consideration their SBIRT, and mental and physical health (25, 26). Although these may

seem like great measures to regulate the access to Schedule II drugs, reports have been made about the inconsistency of these policies from state to state (27). As the present study confirms with the CMS data, there is still a lot of work to be done.

The authors would like to note several limitations of this study and propose future directions of potential research. First, a limitation pertaining to the data was the reporting of claims by NPs and PAs. Data were supplied for these providers as their own entity, while other individual PAs and NPs were included in other provider type categories such as family medicine and internal medicine. (14, 15). Second, this study did not evaluate polypharmacy. When administered alone, opioids produce dose-dependent sedative effects. Their effect can be enhanced by combining them with other sedatives (6). Therefore, future studies should be conducted to investigate the effects of hydrocodone when taken with other opioids or sedative drugs. This study did not filter for specific combination products (i.e., with acetaminophen or ibuprofen), as any drug consisting of hydrocodone was included in the data. The above data were pulled from 2020 (i.e., the most recent available). This may draw an unrealistic picture for the present year considering the impact of the COVID-19 pandemic. It may be beneficial to do an analysis on prescription rates every five years to evaluate the progress of opioid and hydrocodone prescription reductions. Finally, analysis of claims does not allow for determination of what portion of hydrocodone prescriptions were appropriate for individual patients. Further studies with electronic medical records are needed.

Conclusion

Family medicine was the top prescriber of hydrocodone to Medicare Part D patients, followed by internal medicine, nurse practitioners, physician assistants, pain management, anesthesiology, PM&R, orthopaedic surgery, emergency medicine, and dentists. This information will allow for the implementation of proper regulations and policies to aid in the reduction of hydrocodone distribution to the Medicare Part D population.

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Disclosures

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